

My project

IPaC Conservation Measure Report

Generated November 24, 2015 11:38 AM MST

This report does not provide an official list of all project requirements. Please contact the local U.S. Fish & Wildlife office to discuss additional requirements.



US Fish & Wildlife Service

IPaC Conservation Measure Report



Project Description

NAME

My project

PROJECT CODE

VS7WP-2MRNV-CNBEG-MBGYI-3DG6IY

LOCATION

Maricopa County, Arizona

ACTIVITIES

- Sand and Gravel Mining

DESCRIPTION

No description provided



U.S. Fish & Wildlife Contact Information

Species in this report are managed by:

Arizona Ecological Services Field Office

2321 West Royal Palm Road, Suite 103

Phoenix, AZ 85021-4915

(602) 242-0210

Species Analyzed

Species	Status
California least tern (<i>Sterna antillarum browni</i>)	No data
Lesser long-nosed bat (<i>Leptonycteris curasoae yerbabuenae</i>)	No data
Roundtail chub (<i>Gila robusta</i>)	No data
Southwestern willow flycatcher (<i>Empidonax traillii extimus</i>)	Partially analyzed
Sprague's pipit (<i>Anthus spragueii</i>)	No data
Yellow-billed Cuckoo (<i>Coccyzus americanus</i>)	No data
Yuma clapper rail (<i>Rallus longirostris yumanensis</i>)	No data

Conservation Measures

Based on the information you have entered about this project, the US Fish & Wildlife Endangered Species Program recommends the following conservation measures to avoid, minimize or mitigate the effects of your project on threatened and endangered species.

This list is not an official list of all project requirements. Please contact the local office to discuss additional requirements.

Avoidance and Minimization

1. **Clean and Maintain Equipment**

Cleaning and maintenance measures designed to minimize the risk of contaminants from vehicles and equipment from entering species habitats or sensitive ecosystems.

2. **Conduct Biological Monitoring**

Employing a qualified and permitted biological monitor to survey for and relocate (if authorized) all listed species within an action area.

3. **Construct Livestock Fencing**

The use of fencing to either confine livestock to a certain area or to exclude them from another.

4. **Dispose of Trash**

Measures designed to minimize impacts to wildlife and ecosystems from discarded trash. Trash is considered anthropogenic in nature, such as food wrappers and paper, and does not include construction debris or green wastes.

5. **Eliminate Raptor Perches**

Light poles and other high structures will be designed to discourage roosting by birds, particularly ravens or other raptors that may use these structures as hunting perches.

6. **Implement Dust Control Measures**

Dust control measures can consist of a wide variety of methods consistent with all applicable state or local standards. These may include the following reasonable precautions: frequent watering (trucked in, no new water sources) or stabilization of excavations, spoils, access roads, storage piles, and other sources of fugitive dust (parking areas, staging areas, other), if construction activity causes visible emissions of fugitive dust beyond the work areas; or, reduction in the amount of disturbed area where possible.

7. **Implement a Spill Protection Plan**

Design, implement, and train staff on a spill prevention plan to respond immediately to any contaminants.

8. Institute Predator / Parasite Control Measures

Measures designed to either limit the abundance of predators / parasites in a given area, or their access to a particular species or its resources.

9. Institute Refueling Restrictions

Measures designed to minimize the introduction of petroleum, oil, and lubricant (POL) contamination from refueling vehicles and equipment.

10. Institute Seasonal Avoidance

Restraining from certain activities during a specific period in time to avoid impacts to a species.

11. Maintain Habitat Buffer

Avoid activities within a certain distance of occupied species habitat. Each species buffer may differ depending on the species needs and sensitivity to certain activities.

12. Minimize Explosive Charge

Use the smallest amount of explosives needed to accomplish desired result.

13. Minimize Off-Road Travel

Minimizing off-road travel of vehicles or pedestrians to the maximum extent possible. Utilize established roads and paths when available.

14. Minimize Vegetation Removal

Minimize the removal of vegetation to only what is necessary and within the footprint of the project. Selective cutting is preferable over clearing. Leaving the root zone in areas where native vegetation has been removed is encouraged.

15. Minimize Vehicle Speeds

Construct and maintain speed bumps, speed limits, and other measures to reduce the risk of vehicle collisions with wildlife. During periods of decreased visibility (e.g., night, weather, curves), further minimize speeds.

16. Minimize Vehicle Weight

Using the lightest vehicle available that is capable of completing the activity.

17. Minimize the Size and Use of Cofferdams

Limiting the size, season, or length of time that cofferdams are employed to obstruct streamflow.

18. Post and Maintain Signage

Installing and maintaining signage designed to educate or warn individuals.

19. Reduce or Minimize Water Extraction

Measures designed to reduce the amount of water extracted from surface water resources. Removal of surface water affects the flow regime of the resource.

20. Siting Barge Placement

The placement of barges in a manner that avoids or minimizes effects to terrestrial and aquatic ecosystems.

21. Siting Borrow Pits

Locating borrow pits in a manner and location that avoids or minimizes impacts to sensitive species and habitats.

22. Siting Disposal Areas

Locating disposal areas in a manner and location that avoids or minimizes impacts to sensitive species and habitats. Disposal areas are intended for construction debris and green wastes, not human trash

23. Siting Stockpiles

Locating stockpiles of materials in a manner and location that avoids or minimizes impacts to sensitive species and habitats.

24. Store Petroleum, Oil, & Lubricants (POL)

Measures to ensure that POL's are stored and distributed in a manner that minimizes the risk of these contaminants accidentally entering sensitive ecosystems or species habitats.

25. Use Known Sources of Fill Material

Use sources of fill material that are free of weeds and contaminants. This may include soil excavated from the immediate location.

26. Utilize Erosion Control Measures

A wide range of measures designed to slow the flow of water across the surface and minimize erosion.

27. Utilize Specialized Lighting.

Specialized lighting is a wide range of measures that can be employed to minimize or avoid impacts to sensitive species. Examples include using low-intensity lights, down-shielding, and focusing lights away from potential habitat.

US Fish & Wildlife Service

Appendix A: CM Details



1. Clean and Maintain Equipment

DESCRIPTION

Cleaning and maintenance measures designed to minimize the risk of contaminants from vehicles and equipment from entering species habitats or sensitive ecosystems.

Southwestern willow flycatcher (*Empidonax traillii extimus*)

Minimizes environmental stressor 'Increase in Contaminants' caused by the activity 'Use Heavy Equipment'

All equipment maintenance and cleaning should be conducted away from riparian habitat and above the high water mark. Vehicles should be checked daily for leaks and, if detected, maintenance should occur immediately to minimize the level of contamination. Before entering habitat for the first time, after maintenance, and after repairs, equipment should be cleaned to minimize the risk of contamination.

Minimizes environmental stressor 'Introduction of Non-native vegetation' caused by the activity 'Walk Through Habitat'

Clean equipment and clothing between site visits and before entering habitat for the first time to minimize the risk of transporting vegetative spores between sites.

Minimizes environmental stressor 'Increase in Contaminants' caused by the activity 'Use Vehicles Off-Road'

Ensure all vehicles entering riparian habitat are clean and free of leaks.

Minimizes environmental stressor 'Introduction of Non-native vegetation' caused by the activity 'Use Vehicles Off-Road'

Clean vehicles between visits to different sites and before entering habitat for the first time to minimize the risk of transporting vegetative spores between sites.

Minimizes environmental stressor 'Increase in Contaminants' caused by the activity 'Wash Cement Trucks'

Washing vehicles outside of sensitive areas can minimize the amount of contaminants that are washed from vehicles and enter into surrounding habitat. Contaminants may still enter groundwater resources and travel into sensitive areas. For this reason, minimization is based on distance to sensitive resources.

Minimizes environmental stressor 'Decrease in Riparian vegetation' caused by the environmental stressor 'Increase in Contaminants'

All equipment maintenance and cleaning should be conducted away from riparian habitat and above the high water mark. Vehicles should be checked daily for leaks and, if detected, maintenance should occur immediately to minimize the level of contamination. Before entering habitat for the first time, after maintenance, and after repairs, equipment should be cleaned to minimize the risk of contamination.

ACTIVITIES AND STRUCTURES WHICH CAN LEAD TO 'INCREASE IN CONTAMINANTS'

Access Road (Structure), Fuel Delivery, Store Fuels On-Site, Use Heavy Equipment, Use Vehicles Off-Road, Wash Cement Trucks

2. Conduct Biological Monitoring

DESCRIPTION

Employing a qualified and permitted biological monitor to survey for and relocate (if authorized) all listed species within an action area.

Southwestern willow flycatcher (*Empidonax traillii extimus*)

Minimizes 'Burning' caused by the activity 'Burn Vegetation'

If burning is conducted during the southwestern willow flycatcher breeding season, have a biological monitor check surrounding vegetation for nests prior to burning. Found nests should be reported to the nearest U.S. Fish and Wildlife office to determine appropriate actions to reduce the likelihood of nestling or egg loss due to fire.

3. Construct Livestock Fencing

DESCRIPTION

The use of fencing to either confine livestock to a certain area or to exclude them from another.

Southwestern willow flycatcher (*Empidonax traillii extimus*)

Avoids environmental stressor 'Loss of Riparian vegetation' caused by the environmental stressor 'Increase in Livestock'

Excluding cattle from riparian vegetation ensures that vegetation structure remains intact for southwestern willow flycatcher use.

ACTIVITIES AND STRUCTURES WHICH CAN LEAD TO 'INCREASE IN LIVESTOCK'

Building (Structure), Concrete Batch Plant (Structure)

4. Dispose of Trash

DESCRIPTION

Measures designed to minimize impacts to wildlife and ecosystems from discarded trash. Trash is considered anthropogenic in nature, such as food wrappers and paper, and does not include construction debris or green wastes.

Southwestern willow flycatcher (*Empidonax traillii extimus*)

Minimizes environmental stressor 'Increase in Human Debris' caused by the presence of a 'Vegetated Staging Area (Structure)'

All trash should be disposed of in sealed trash receptacles that are emptied on a regular basis to ensure that attractants of predators and parasites, such as cowbirds, are removed from the area.

ACTIVITIES AND STRUCTURES WHICH CAN LEAD TO 'VEGETATED STAGING AREA (STRUCTURE)'
Vegetated Staging Area (Structure)

Minimizes environmental stressor 'Increase in Human Debris' caused by the presence of a 'Gravel Staging Area (Structure)'

All trash should be disposed of in sealed trash receptacles that are emptied on a regular basis to ensure that attractants of predators and parasites, such as cowbirds, are removed from the area.

ACTIVITIES AND STRUCTURES WHICH CAN LEAD TO 'GRAVEL STAGING AREA (STRUCTURE)'
Gravel Staging Area (Structure)

Minimizes environmental stressor 'Increase in Human Debris' caused by the environmental stressor 'Increase in Human presence'

Strategically placing enclosed trash receptacles near areas of increased human presence should reduce the amount of discarded human refuse and limit attractants of predators and brood parasites, such as cowbirds.

ACTIVITIES AND STRUCTURES WHICH CAN LEAD TO 'INCREASE IN HUMAN PRESENCE'
Building (Structure), Concrete Batch Plant (Structure)

5. Eliminate Raptor Perches

DESCRIPTION

Light poles and other high structures will be designed to discourage roosting by birds, particularly ravens or other raptors that may use these structures as hunting perches.

Southwestern willow flycatcher (*Empidonax traillii extimus*)

Minimizes environmental stressor 'Increase in Raptor Perches' caused by the presence of a 'Concrete Batch Plant (Structure)'

Storage tanks should be as short and low to the ground as possible. When placed near potential flycatcher habitat, storage tanks should be sited as far from dense riparian vegetation as possible. In cases where bird perching deterrents are feasible, utilization of said deterrents is recommended.

ACTIVITIES AND STRUCTURES WHICH CAN LEAD TO 'CONCRETE BATCH PLANT (STRUCTURE)'
Concrete Batch Plant (Structure)

6. Implement Dust Control Measures

DESCRIPTION

Dust control measures can consist of a wide variety of methods consistent with all applicable state or local standards. These may include the following reasonable precautions: frequent watering (trucked in, no new water sources) or stabilization of excavations, spoils, access roads, storage piles, and other sources of fugitive dust (parking areas, staging areas, other), if construction activity causes visible emissions of fugitive dust beyond the work areas; or, reduction in the amount of disturbed area where possible.

Southwestern willow flycatcher (*Empidonax traillii extimus*)

Minimizes environmental stressor 'Increase in Dust' caused by the environmental stressor 'Introduction of Vehicle traffic'

The planting of native vegetation along roadways can reduce the amount of dirt that reaches road surface and capture dust that is kicked up by passing vehicles.

ACTIVITIES AND STRUCTURES WHICH CAN LEAD TO 'INTRODUCTION OF VEHICLE TRAFFIC'

Access Road (Structure)

7. Implement a Spill Protection Plan

DESCRIPTION

Design, implement, and train staff on a spill prevention plan to respond immediately to any contaminants.

Southwestern willow flycatcher (*Empidonax traillii extimus*)

Minimizes environmental stressor 'Increase in Contaminants' caused by the activity 'Use Heavy Equipment'

All spills or leaks should be addressed by an approved spill prevention plan. Reacting quickly to a spill or leak can minimize the effect that a spill has on a species or their habitat.

8. Institute Predator / Parasite Control Measures

DESCRIPTION

Measures designed to either limit the abundance of predators / parasites in a given area, or their access to a particular species or its resources.

Southwestern willow flycatcher (*Empidonax traillii extimus*)

Minimizes 'Parasitism' caused by the environmental stressor 'Increase in Brood Parasites'

The trapping and removal of cowbirds has been shown in certain situations to reduce incidences of brood parasitism. Cowbird trapping should not be used to offset actions that result in loss, fragmentation, or modification of designated critical habitat, occupied habitat, or potential habitat. Rather, cowbird control should be implemented at a site only after data collection shows that at least 20-30% of flycatcher nests are parasitized for two or more successive years.

ACTIVITIES AND STRUCTURES WHICH CAN LEAD TO 'INCREASE IN BROOD PARASITES'

Access Road (Structure), Addition of Imported Soil, Barge Staging, Berm / Levee (Structure), Blasting, Building (Structure), Burn Vegetation, Bury Debris, Bury Rocks, Cofferdam (Structure), Concrete Batch Plant (Structure), Culvert (Structure), Debris Stockpile (Structure), Detention Basin (Structure), Drag Ground Penetrating Radar, Drainage Ditch (Structure), Fuel Delivery, Gravel Staging Area (Structure), Lay Sod, Redistribute Rocks, Redistribute Soils, Regrade / Resurface, Remove Root Zone Structure, Remove Soil, Remove Vegetation, Retention Basin (Structure), Riprap (Structure), Rock Stockpile (Structure), Soil Stockpile (Structure), Store Fuels On-Site, Use Heavy Equipment, Use Vehicles Off-Road, Use of Borrow Areas, Vegetated Staging Area (Structure), Vegetation Stockpile (Structure), Walk Through Habitat, Wash Cement Trucks

Minimizes 'Parasitism' caused by the environmental stressor 'Increase in Parasites'

The trapping and removal of cowbirds has been shown in certain situations to reduce incidences of brood parasitism. Cowbird trapping should not be used to offset actions that result in loss, fragmentation, or modification of designated critical habitat, occupied habitat, or potential habitat. Rather, cowbird control should be implemented at a site only after data collection shows that at least 20-30% of flycatcher nests are parasitized for two or more successive years.

ACTIVITIES AND STRUCTURES WHICH CAN LEAD TO 'INCREASE IN PARASITES'

Building (Structure), Concrete Batch Plant (Structure)

9. Institute Refueling Restrictions

DESCRIPTION

Measures designed to minimize the introduction of petroleum, oil, and lubricant (POL) contamination from refueling vehicles and equipment.

Southwestern willow flycatcher (*Empidonax traillii extimus*)

Minimizes environmental stressor 'Increase in Contaminants' caused by the activity 'Use Heavy Equipment'

Refueling should occur away from all riparian habitat and outside of the high water mark.

Minimizes environmental stressor 'Increase in Contaminants' caused by the activity 'Use Vehicles Off-Road'

The refueling of all vehicles should be done outside of riparian habitat.

Minimizes environmental stressor 'Decrease in Riparian vegetation' caused by the environmental stressor 'Increase in Contaminants'

Refueling should occur away from all riparian habitat and outside of the high water mark.

ACTIVITIES AND STRUCTURES WHICH CAN LEAD TO 'INCREASE IN CONTAMINANTS'

Access Road (Structure), Fuel Delivery, Store Fuels On-Site, Use Heavy Equipment, Use Vehicles Off-Road, Wash Cement Trucks

10. Institute Seasonal Avoidance

DESCRIPTION

Restraining from certain activities during a specific period in time to avoid impacts to a species.

Southwestern willow flycatcher (*Empidonax traillii extimus*)

Avoids 'Collisions' caused by the activity 'Blasting'

Southwestern willow flycatchers arrive on the breeding grounds sometime between April and June and leave by the end of September. Therefore, blasting after September and before April will avoid the risk of falling debris colliding with flycatchers during their breeding season and the negative effects associated with this activity.

Avoids 'Auditory Disturbance' caused by the activity 'Blasting'

Southwestern willow flycatchers arrive on the breeding grounds sometime between April and June and leave by the end of September. Therefore, blasting after September and before April will avoid auditorily disturbing the flycatcher during their breeding season and the negative effects associated with this activity.

Avoids environmental stressor 'Introduction of Noise' caused by the activity 'Vehicle Mounted-Coring Tools'

Southwestern willow flycatchers arrive on the breeding grounds sometime between April and June and leave by the end of September. Therefore, conducting activities that increase ambient noise levels after September and before April will avoid auditorily interfering with the flycatcher during their breeding season and the negative effects associated with this activity.

Avoids environmental stressor 'Introduction of Noise' caused by the activity 'Barge Staging'

Southwestern willow flycatchers arrive on the breeding grounds sometime between April and June and leave by the end of September. Therefore, prohibiting noise producing activities in or near potential flycatcher habitat between April 1 - October 1 will avoid the negative effects that increased noise levels can have on the normal feeding, breeding, and sheltering behavior of the species during their critical breeding season.

Avoids 'Visual Disturbance' caused by the activity 'Burn Vegetation'

Southwestern willow flycatchers arrive on the breeding grounds sometime between April and June and leave by the end of September. Therefore, prohibiting control burns within or near occupied flycatcher habitat between April 1 and October 1 will avoid visually disturbing the species during their breeding season.

Avoids 'Burning' caused by the activity 'Burn Vegetation'

Southwestern willow flycatchers arrive on the breeding grounds sometime between April and June and leave by the end of September. Therefore, conducting all control burns in or near flycatcher habitat after September and before April will avoid visually disturbing the flycatcher during their breeding season and the negative effects associated with this activity.

Avoids 'Visual Disturbance' caused by the activity 'Use Vehicles Off-Road'

Southwestern willow flycatchers arrive on the breeding grounds sometime between April and June and leave by the end of September. Therefore, prohibiting activities within or near occupied flycatcher habitat between April 1 and October 1 will avoid visually disturbing the species during their breeding season.

Avoids environmental stressor 'Introduction of Noise' caused by the activity 'Use of Helicopter'

Southwestern willow flycatchers arrive on the breeding grounds sometime between April and June and leave by the end of September. Therefore, prohibiting noise producing activities in or near potential flycatcher habitat between April 1 - October 1 will avoid the negative effects that increased noise levels can have on the normal feeding, breeding, and sheltering behavior of the species during their critical breeding season.

Avoids environmental stressor 'Introduction of Noise' caused by the activity 'Use Vehicles Off-Road'

Southwestern willow flycatchers arrive on the breeding grounds sometime between April and June and leave by the end of September. Therefore, prohibiting noise producing activities in or near potential flycatcher habitat between April 1 - October 1 will avoid the negative effects that increased noise levels can have on the normal feeding, breeding, and sheltering behavior of the species during their critical breeding season.

Avoids 'Disturbance' caused by the activity 'Use of Drone'

Southwestern willow flycatchers arrive on the breeding grounds sometime between April and June and leave by the end of September. Therefore, prohibiting activities within or near occupied flycatcher habitat between April 1 and October 1 will avoid disturbing the species during their breeding season.

Avoids 'Visual Disturbance' caused by the activity 'Walk Through Aquatic Habitat'

Southwestern willow flycatchers arrive on the breeding grounds sometime between April and June and leave by the end of September. Therefore, prohibiting activities within or near occupied flycatcher habitat between April 1 and October 1 will avoid visually disturbing the species during their breeding season.

Avoids environmental stressor 'Introduction of Noise' caused by the activity 'Use Heavy Equipment'

Southwestern willow flycatchers arrive on the breeding grounds sometime between April and June and leave by the end of September. Therefore, conducting activities that increase ambient noise levels after September and before April will avoid auditorily interfering with the flycatcher during their breeding season and the negative effects associated with this activity.

Avoids 'Disturbance' caused by the activity 'Use of Motorized Boats'

Southwestern willow flycatchers arrive on the breeding grounds sometime between April and June and leave by the end of September. Therefore, conducting activities that increases ambient noise levels after September and before April will avoid visually disturbing the flycatcher during their breeding season and the negative effects associated with this activity.

Avoids 'Visual Disturbance' caused by the activity 'Walk Through Habitat'

Southwestern willow flycatchers arrive on the breeding grounds sometime between April and June and leave by the end of September. Therefore, prohibiting activities within or near occupied flycatcher habitat between April 1 and October 1 will avoid visually disturbing the species during their breeding season.

Avoids environmental stressor 'Introduction of Noise' caused by the activity 'Use Motorized Hand Tools'

Southwestern willow flycatchers arrive on the breeding grounds sometime between April and June and leave by the end of September. Therefore, conducting activities that increases ambient noise levels after September and before April will avoid visually disturbing the flycatcher during their breeding season and the negative effects associated with this activity.

Avoids 'Disturbance' caused by the activity 'Use Hand Tools'

Southwestern willow flycatchers arrive on the breeding grounds sometime between April and June and leave by the end of September. Therefore, prohibiting noise producing activities in or near potential flycatcher habitat between April 1 - October 1 will avoid the negative effects that increased noise levels can have on the normal feeding, breeding, and sheltering behavior of the species during their critical breeding season.

11. Maintain Habitat Buffer

DESCRIPTION

Avoid activities within a certain distance of occupied species habitat. Each species buffer may differ depending on the species needs and sensitivity to certain activities.

Southwestern willow flycatcher (*Empidonax traillii extimus*)

Minimizes environmental stressor 'Introduction of Noise' caused by the activity 'Vehicle Mounted-Coring Tools'

Creating a buffer zone around occupied habitat can minimize the effects of noise on southwestern willow flycatchers. The size of the buffer would depend on the decibel level of the introduced noise, its attenuation distance, and the time of year (breeding vs. migration period).

Minimizes environmental stressor 'Introduction of Noise' caused by the environmental stressor 'Increase in Human presence'

Creating a buffer zone around occupied habitat can minimize the effects of noise on southwestern willow flycatchers. The size of the buffer would depend on the decibel level of the introduced noise, its attenuation distance, and the time of year (breeding vs. migration period).

ACTIVITIES AND STRUCTURES WHICH CAN LEAD TO 'INCREASE IN HUMAN PRESENCE'

Building (Structure), Concrete Batch Plant (Structure)

Minimizes environmental stressor 'Introduction of Noise' caused by the activity 'Use of Helicopter'

Establish a flight floor that allows for the attenuation of noise to a decibel level that is consistent with the ambient noise levels of surrounding occupied habitat.

Minimizes 'Visual Disturbance' caused by the activity 'Use Vehicles Off-Road'

Creating a buffer zone around occupied flycatcher habitat can minimize the visual disturbance that an activity has on the species. The size of the buffer would depend on the activity and the time of year (breeding vs. migration period).

Minimizes environmental stressor 'Introduction of Noise' caused by the activity 'Use Vehicles Off-Road'

Creating a buffer zone around occupied habitat can minimize the effects of noise on southwestern willow flycatchers. The size of the buffer would depend on the decibel level of the introduced noise, its attenuation distance, and the time of year (breeding vs. migration period).

Minimizes 'Visual Disturbance' caused by the activity 'Walk Through Aquatic Habitat'

Creating a buffer zone around occupied flycatcher habitat can minimize the visual disturbance that an activity has on the species. The size of the buffer would depend on the activity and the time of year (breeding vs. migration period).

Minimizes environmental stressor 'Introduction of Noise' caused by the activity 'Use Heavy Equipment'

Creating a buffer zone around occupied habitat can minimize the effects of noise on southwestern willow flycatchers. The size of the buffer would depend on the decibel level of the introduced noise, its attenuation distance, and the time of year (breeding vs. migration period).

Minimizes 'Disturbance' caused by the activity 'Use of Motorized Boats'

Creating a buffer zone around occupied habitat can minimize the effects of noise on southwestern willow flycatchers. The size of the buffer would depend on the decibel level of the introduced noise, its attenuation distance, and the time of year (breeding vs. migration period).

Minimizes 'Disturbance' caused by the activity 'Use of Drone'

Establish a no fly buffer that allows for the attenuation of noise to a decibel level that is consistent with ambient noise levels within the surrounding occupied habitat.

Minimizes 'Disturbance' caused by the activity 'Use Hand Tools'

Creating a buffer zone around occupied habitat can minimize the effects of noise on southwestern willow flycatchers. The size of the buffer would depend on the decibel level of the introduced noise, its attenuation distance, and the time of year (breeding vs. migration period).

Minimizes 'Visual Disturbance' caused by the activity 'Walk Through Habitat'

Creating a buffer zone around occupied flycatcher habitat can minimize the visual disturbance that an activity has on the species. The size of the buffer would depend on the activity and the time of year (breeding vs. migration period).

Minimizes environmental stressor 'Introduction of Noise' caused by the activity 'Use Motorized Hand Tools'

Creating a buffer zone around occupied habitat can minimize the effects of noise on southwestern willow flycatchers. The size of the buffer would depend on the decibel level of the introduced noise, its attenuation distance, and the time of year (breeding vs. migration period).

12. Minimize Explosive Charge

DESCRIPTION

Use the smallest amount of explosives needed to accomplish desired result.

Southwestern willow flycatcher (*Empidonax traillii extimus*)

Minimizes 'Collisions' caused by the activity 'Blasting'

Minimizing the explosive charge will limit the amount of falling debris, the distance that debris will travel, and the concussive force of the explosion.

Minimizes environmental stressor 'Loss of Vegetation' caused by the activity 'Blasting'

Minimizing the explosive charge may limit the amount of vegetation destroyed by concussive forces or falling debris.

Minimizes 'Auditory Disturbance' caused by the activity 'Blasting'

While explosions will still result in disturbance, minimizing the explosive charge will limit the distance that the sound will carry.

Minimizes environmental stressor 'Change in Topography' caused by the activity 'Blasting'

Minimizing the explosive charge will minimize changes in contours.

Minimizes environmental stressor 'Loss of Riparian vegetation' caused by the activity 'Blasting'

Minimizing the explosive charge may limit the amount of vegetation destroyed by concussive forces or falling debris.

13. Minimize Off-Road Travel

DESCRIPTION

Minimizing off-road travel of vehicles or pedestrians to the maximum extent possible. Utilize established roads and paths when available.

Southwestern willow flycatcher (*Empidonax traillii extimus*)

Minimizes environmental stressor 'Decrease in Vegetation' caused by the activity 'Use Vehicles Off-Road'

Off road travel by vehicles within or near potential flycatcher habitat should be done only when absolutely necessary. If unable to avoid the use of vehicles off-road, routes should be planned utilizing established roads and vehicle paths when available.

Minimizes environmental stressor 'Decrease in Riparian vegetation' caused by the activity 'Use Vehicles Off-Road'

Off road travel by vehicles within riparian habitat should be done only when absolutely necessary. If unable to avoid the use of vehicles within riparian habitat, routes should be planned utilizing established roads and vehicle paths when available.

Minimizes environmental stressor 'Decrease in Riparian vegetation' caused by the activity 'Walk Through Habitat'

Off-road travel, by either pedestrians or vehicles, should be avoided to the maximum extent possible. Stay on roads and trails when possible and avoid cutting trails through undisturbed habitat.

14. Minimize Vegetation Removal

DESCRIPTION

Minimize the removal of vegetation to only what is necessary and within the footprint of the project. Selective cutting is preferable over clearing. Leaving the root zone in areas where native vegetation has been removed is encouraged.

Southwestern willow flycatcher (*Empidonax traillii extimus*)

Minimizes environmental stressor 'Increase in Erosion' caused by the activity 'Remove Vegetation'

Selectively cut woody vegetation and leave grasses and root systems in place when applicable.

Minimizes environmental stressor 'Decrease in Riparian vegetation' caused by the activity 'Remove Vegetation'

Remove only the vegetation necessary to complete the project. Selectively cutting vegetation is preferred over total vegetation removal when possible.

Minimizes environmental stressor 'Increase in Evaporation' caused by the activity 'Remove Vegetation'

Evaporation primarily occurs from direct sunlight. Selective cutting of vegetation will leave vegetation in place for shading, reducing the amount of evaporation that would occur with vegetation clear-cutting.

Minimizes environmental stressor 'Decrease in Vegetation' caused by the activity 'Remove Vegetation'

Remove only the vegetation necessary to complete the project. Selectively cutting vegetation is preferred over total vegetation removal when possible.

Minimizes environmental stressor 'Increase in Erosion' caused by the activity 'Remove Root Zone Structure'

Root structures help hold soil in place, thereby minimizing erosion. By limiting the removal of root structures to only what is necessary, we can limit the severity of erosion that occurs.

Minimizes environmental stressor 'Decrease in Riparian vegetation' caused by the activity 'Burn Vegetation'

Limit the size of the burn to only what is necessary in order to complete the project.

Minimizes environmental stressor 'Decrease in Vegetation' caused by the activity 'Burn Vegetation'

Limit the size of the burn to only what is necessary in order to complete the project.

15. Minimize Vehicle Speeds

DESCRIPTION

Construct and maintain speed bumps, speed limits, and other measures to reduce the risk of vehicle collisions with wildlife. During periods of decreased visibility (e.g., night, weather, curves), further minimize speeds.

Southwestern willow flycatcher (*Empidonax traillii extimus*)

Minimizes 'Collisions' caused by the environmental stressor 'Introduction of Vehicle traffic'

Minimizing vehicle speeds may reduce the number of collisions between vehicles and southwestern willow flycatchers. This is especially true when roads intersect with riparian areas. Vehicle speeds can be reduced either through road engineering, texture or speed bumps, or through enforced regulations.

ACTIVITIES AND STRUCTURES WHICH CAN LEAD TO 'INTRODUCTION OF VEHICLE TRAFFIC'

Access Road (Structure)

16. Minimize Vehicle Weight

DESCRIPTION

Using the lightest vehicle available that is capable of completing the activity.

Southwestern willow flycatcher (*Empidonax traillii extimus*)

Minimizes environmental stressor 'Increase in Soil Compaction' caused by the activity 'Use Heavy Equipment'

While the use of any vehicle will cause some degree of compaction, minimizing the weight of the vehicle will minimize the degree to which compaction occurs within the habitat. This measure is only applicable in areas that will not be subjected to a permanent change in land use.

Minimizes environmental stressor 'Increase in Soil Compaction' caused by the activity 'Use Vehicles Off-Road'

When using vehicles within riparian habitat, using the lightest vehicle capable of navigating the terrain will minimize soil compaction and, ultimately, its effect on vegetation.

17. Minimize the Size and Use of Cofferdams

DESCRIPTION

Limiting the size, season, or length of time that cofferdams are employed to obstruct streamflow.

Southwestern willow flycatcher (*Empidonax traillii extimus*)

Minimizes environmental stressor 'Alteration of Streamflow' caused by the presence of a 'Cofferdam (Structure)'

Restrict the use of cofferdams to months that typically see lower streamflows. Additionally, cofferdams should be limited in size as to not obstruct more of the streamflow than necessary.

ACTIVITIES AND STRUCTURES WHICH CAN LEAD TO 'COFFERDAM (STRUCTURE)'
Cofferdam (Structure)

18. Post and Maintain Signage

DESCRIPTION

Installing and maintaining signage designed to educate or warn individuals.

Southwestern willow flycatcher (*Empidonax traillii extimus*)

Minimizes environmental stressor 'Increase in Invasive plant species' caused by the environmental stressor 'Increase in Human presence'

Posting and maintaining signs educating the public of the risk that invasive species has on southwestern willow flycatchers and measures that they can take to minimize the introduction and spread of invasive plant species may limit the risk of spreading invasive plant species.

ACTIVITIES AND STRUCTURES WHICH CAN LEAD TO 'INCREASE IN HUMAN PRESENCE'

Building (Structure), Concrete Batch Plant (Structure)

Minimizes environmental stressor 'Increase in Human Debris' caused by the environmental stressor 'Increase in Human presence'

Posting and maintaining signs educating the public of the risk that trash plays to southwestern willow flycatchers may limit the amount of human refuse, thereby reducing attractants for predators and brood parasites, such as cowbirds.

ACTIVITIES AND STRUCTURES WHICH CAN LEAD TO 'INCREASE IN HUMAN PRESENCE'

Building (Structure), Concrete Batch Plant (Structure)

19. Reduce or Minimize Water Extraction

DESCRIPTION

Measures designed to reduce the amount of water extracted from surface water resources. Removal of surface water affects the flow regime of the resource.

Southwestern willow flycatcher (*Empidonax traillii extimus*)

Minimizes environmental stressor 'Decrease in Groundwater' caused by the environmental stressor 'Increase in Livestock'

Water conservation measures can minimize, but not avoid, decreases in groundwater resources. Measures can include minimizing the amount of water loss to evaporation by limiting the amount of water available for livestock consumption to only what is necessary or watering at certain times of the day instead of having surplus water available at all times.

ACTIVITIES AND STRUCTURES WHICH CAN LEAD TO 'INCREASE IN LIVESTOCK'

Building (Structure), Concrete Batch Plant (Structure)

Minimizes environmental stressor 'Decrease in Streamflow' caused by the environmental stressor 'Increase in Water Usage'

Water conservation measures can minimize, but not avoid, decreases in streamflow. Measures can include the use of drought resistant plants, rain catchments, as well as any other non-invasive measure designed to decrease water usage. Other engineered solution may be implemented to increase streamflow and offset water extraction, such as using water treatment plant effluent to augment streamflow.

ACTIVITIES AND STRUCTURES WHICH CAN LEAD TO 'INCREASE IN WATER USAGE'

Building (Structure), Concrete Batch Plant (Structure)

Minimizes environmental stressor 'Decrease in Groundwater' caused by the environmental stressor 'Increase in Water Usage'

Water conservation measures can minimize, but not avoid, decreases in groundwater resources. Measures can include the use of drought resistant plants, rain catchments, as well as any other non-invasive measure designed to decrease water usage.

ACTIVITIES AND STRUCTURES WHICH CAN LEAD TO 'INCREASE IN WATER USAGE'

Building (Structure), Concrete Batch Plant (Structure)

20. Siting Barge Placement

DESCRIPTION

The placement of barges in a manner that avoids or minimizes effects to terrestrial and aquatic ecosystems.

Southwestern willow flycatcher (*Empidonax traillii extimus*)

Avoids environmental stressor 'Decrease in Riparian vegetation' caused by the activity 'Barge Staging'

Barges should be staged either off-shore or in areas with no riparian vegetation.

21. Siting Borrow Pits

DESCRIPTION

Locating borrow pits in a manner and location that avoids or minimizes impacts to sensitive species and habitats.

Southwestern willow flycatcher (*Empidonax traillii extimus*)

Avoids environmental stressor 'Decrease in Riparian vegetation' caused by the activity 'Use of Borrow Areas'

Borrow pits should be located outside of riparian habitat and above the ordinary high water mark. Locating borrow pits outside of established riparian habitat will avoid the loss of critical riparian vegetation.

Avoids environmental stressor 'Change in Topography' caused by the activity 'Use of Borrow Areas'

Locating borrow areas outside of riparian habitat will avoid changing local topography which may affect the soil moisture levels that riparian vegetation require.

22. Siting Disposal Areas

DESCRIPTION

Locating disposal areas in a manner and location that avoids or minimizes impacts to sensitive species and habitats. Disposal areas are intended for construction debris and green wastes, not human trash

Southwestern willow flycatcher (*Empidonax traillii extimus*)

Avoids environmental stressor 'Change in Water Infiltration' caused by the activity 'Bury Rocks'

Breeding southwestern willow flycatchers are dependent on dense riparian vegetation for breeding. Bury rocks outside of riparian areas to avoid changing the soil moisture levels that riparian vegetation relies upon.

Avoids environmental stressor 'Change in Water Infiltration' caused by the activity 'Bury Debris'

Breeding southwestern willow flycatchers are dependent on dense riparian vegetation for breeding. Bury debris outside of riparian areas to avoid changing the soil moisture levels that riparian vegetation relies upon.

23. Siting Stockpiles

DESCRIPTION

Locating stockpiles of materials in a manner and location that avoids or minimizes impacts to sensitive species and habitats.

Southwestern willow flycatcher (*Empidonax traillii extimus*)

Avoids environmental stressor 'Loss of Riparian vegetation' caused by the presence of a 'Rock Stockpile (Structure)'

Storing stockpiles of rocks outside of riparian habitat will avoid crushing riparian vegetation used by southwestern willow flycatchers.

ACTIVITIES AND STRUCTURES WHICH CAN LEAD TO 'ROCK STOCKPILE (STRUCTURE)'

Rock Stockpile (Structure)

Avoids environmental stressor 'Decrease in Riparian vegetation' caused by the presence of a 'Soil Stockpile (Structure)'

Locating stockpiles outside of riparian habitat will avoid crushing and smothering the riparian vegetation that the southwestern willow flycatcher relies on.

ACTIVITIES AND STRUCTURES WHICH CAN LEAD TO 'SOIL STOCKPILE (STRUCTURE)'

Soil Stockpile (Structure)

Avoids environmental stressor 'Loss of Riparian vegetation' caused by the presence of a 'Debris Stockpile (Structure)'

Storing stockpiles of debris outside of riparian habitat will avoid crushing riparian vegetation used by southwestern willow flycatchers.

ACTIVITIES AND STRUCTURES WHICH CAN LEAD TO 'DEBRIS STOCKPILE (STRUCTURE)'

Debris Stockpile (Structure)

24. Store Petroleum, Oil, & Lubricants (POL)

DESCRIPTION

Measures to ensure that POL's are stored and distributed in a manner that minimizes the risk of these contaminants accidentally entering sensitive ecosystems or species habitats.

Southwestern willow flycatcher (*Empidonax traillii extimus*)

Minimizes environmental stressor 'Increase in Contaminants' caused by the activity 'Store Fuels On-Site'

A secondary containment system, such as a non-permeable membrane, will limit the amount of contaminants that enter into the habitat.

Minimizes environmental stressor 'Increase in Contaminants' caused by the activity 'Fuel Delivery'

Contaminant containment system will minimize the amount of stored fuel and oil that is able to enter the soil.

Avoids environmental stressor 'Decrease in Riparian vegetation' caused by the environmental stressor 'Increase in Contaminants'

All POL's should be stored away from riparian habitat and outside of the high water mark. All fluids should be stored on a non-permeable membrane with raised sides to prevent spills from entering the habitat before clean-up.

ACTIVITIES AND STRUCTURES WHICH CAN LEAD TO 'INCREASE IN CONTAMINANTS'

Access Road (Structure), Fuel Delivery, Store Fuels On-Site, Use Heavy Equipment, Use Vehicles
Off-Road, Wash Cement Trucks

25. Use Known Sources of Fill Material

DESCRIPTION

Use sources of fill material that are free of weeds and contaminants. This may include soil excavated from the immediate location.

Southwestern willow flycatcher (*Empidonax traillii extimus*)

Minimizes environmental stressor 'Introduction of Non-native vegetation' caused by the activity 'Addition of Imported Soil'

Using a source of fill material that is known to be free of contaminants and non-native spores will reduce the risk of introducing additional non-native species into southwestern willow flycatcher habitat.

26. Utilize Erosion Control Measures

DESCRIPTION

A wide range of measures designed to slow the flow of water across the surface and minimize erosion.

Southwestern willow flycatcher (*Empidonax traillii extimus*)

Minimizes environmental stressor 'Increase in Erosion' caused by the environmental stressor 'Increase in Surface runoff'

A wide range of measures can be used to slow the movement of water along the surface. Measures can include the use of hay bales, silt fences, and other measures to control erosion. The preferred measure, however, is the planting of native vegetation to slow the movement of water from a project site and hold the soil in place.

ACTIVITIES AND STRUCTURES WHICH CAN LEAD TO 'INCREASE IN SURFACE RUNOFF'

Building (Structure), Concrete Batch Plant (Structure), Debris Stockpile (Structure), Rock Stockpile (Structure), Use Heavy Equipment, Use Vehicles Off-Road

Minimizes environmental stressor 'Increase in Erosion' caused by the activity 'Remove Vegetation'

A wide range of erosion control measures can be used, including silt fences, hay bales, erosion control blankets, and check ditches.

Minimizes environmental stressor 'Increase in Erosion' caused by the activity 'Remove Root Zone Structure'

A wide range of erosion control measures can be used, including silt fences, hay bales, erosion control blankets, and check ditches.

27. Utilize Specialized Lighting.

DESCRIPTION

Specialized lighting is a wide range of measures that can be employed to minimize or avoid impacts to sensitive species. Examples include using low-intensity lights, down-shielding, and focusing lights away from potential habitat.

Southwestern willow flycatcher (*Empidonax traillii extimus*)

Minimizes 'Predation' caused by the environmental stressor 'Introduction of Artificial lighting'

Directing light away from vegetation and lowering lighting intensity may minimize the species exposure to nocturnal predators.

ACTIVITIES AND STRUCTURES WHICH CAN LEAD TO 'INTRODUCTION OF ARTIFICIAL LIGHTING'
Outdoor Lighting